

# SM16G45, SM16J45, SM16G45A, SM16J45A

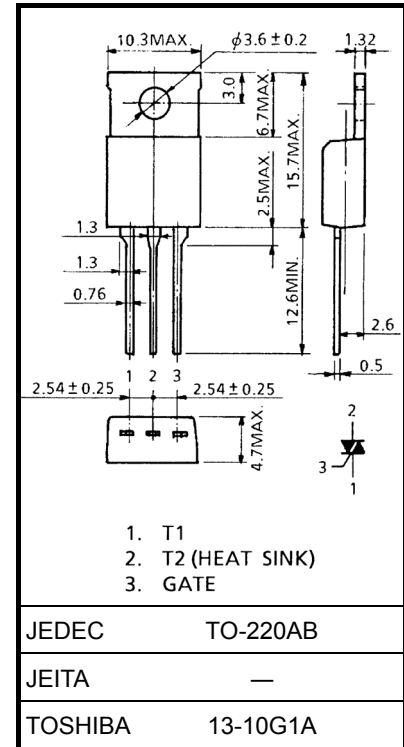
## AC POWER CONTROL APPLICATIONS

Unit: mm

- Repetitive Peak Off-State Voltage :  $V_{DRM} = 400\text{V}$ , 600V
- R.M.S On-State Current :  $I_T(\text{RMS}) = 16\text{A}$
- High Commutating ( $dv/dt$ )

## ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SM16G45 SM16G45A	400	V
	SM16J45 SM16J45A	600	
R.M.S On-State Current (Full Sine Waveform $T_c = 100^\circ\text{C}$ )	$I_T(\text{RMS})$	16	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{TSM}$	150 (50Hz)	A
		165 (60Hz)	
$I^2t$ Limit Value	$I^2t$	112.5	$\text{A}^2\text{s}$
Peak Gate Power Dissipation	$P_{GM}$	5	W
Average Gate Power Dissipation	$P_G(\text{AV})$	0.5	W
Peak Gate Voltage	$V_{GM}$	10	V
Peak Gate Current	$I_{GM}$	2	A
Junction Temperature	$T_j$	$-40 \sim 125$	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-40 \sim 125$	$^\circ\text{C}$



Weight: 2.0 g (typ.)

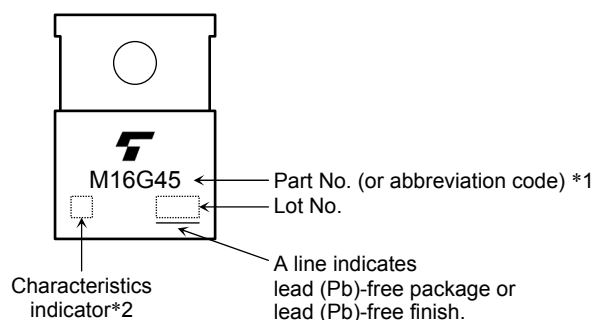
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

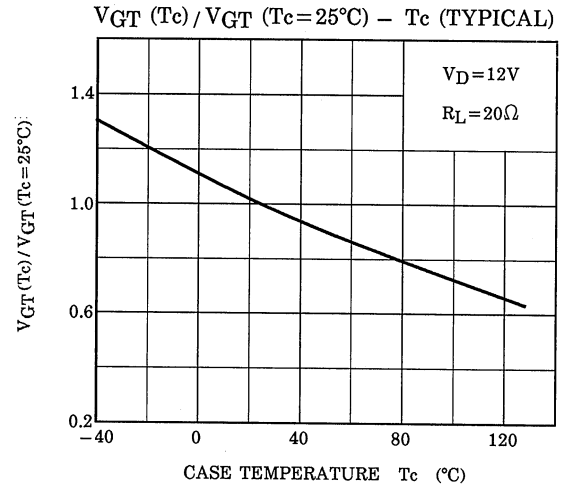
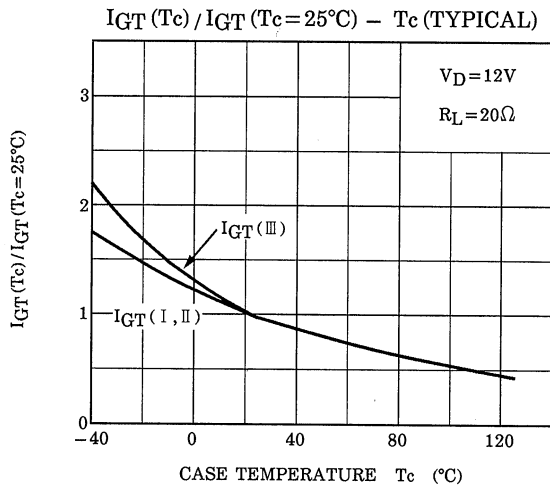
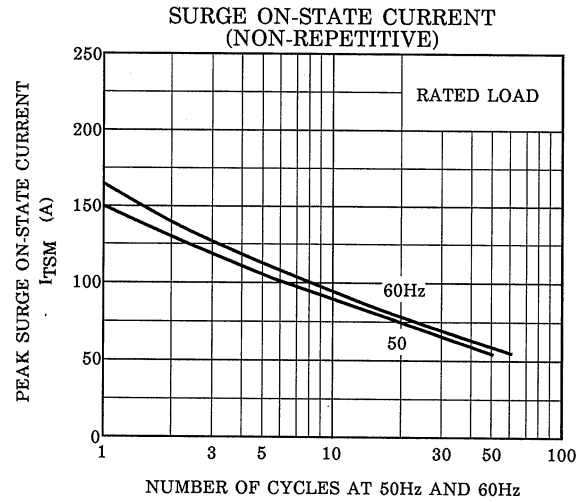
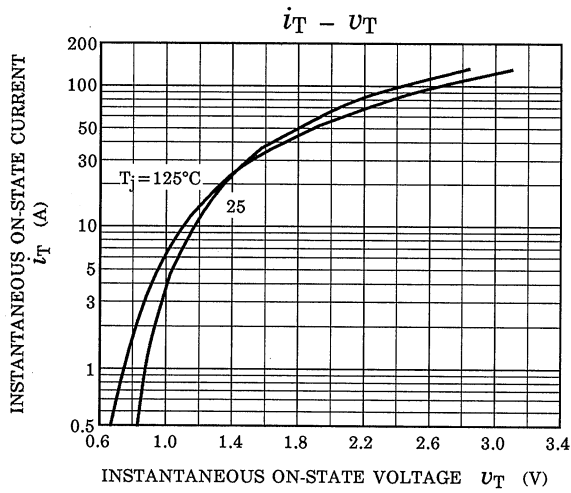
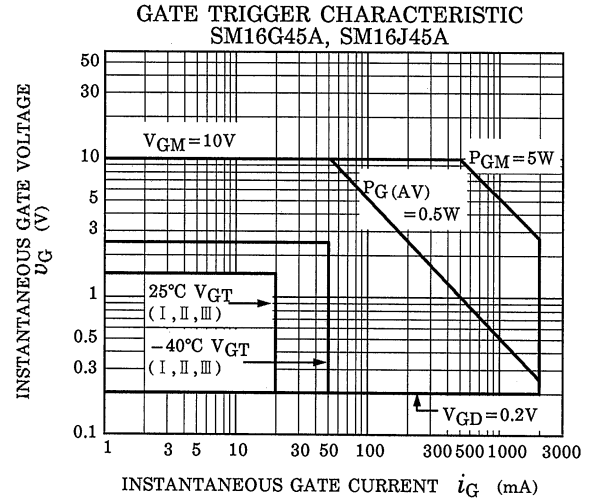
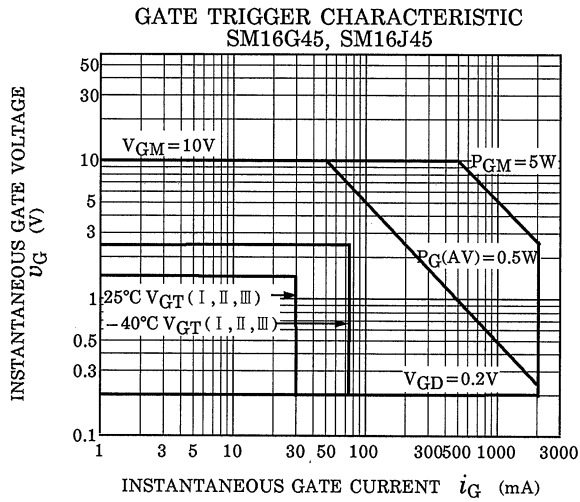
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

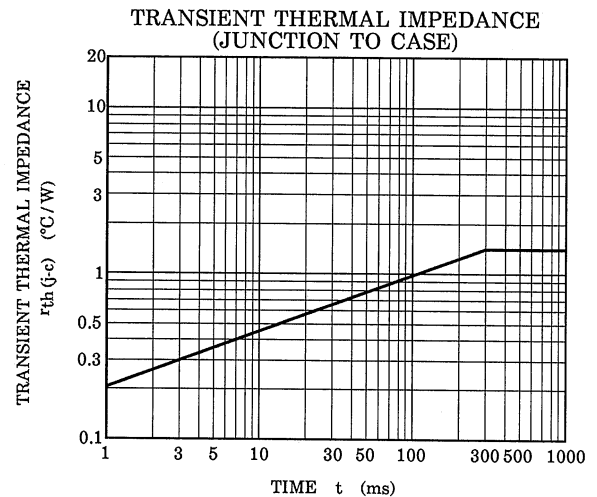
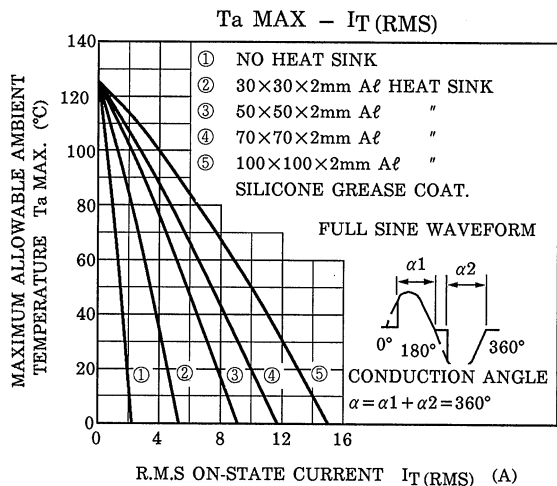
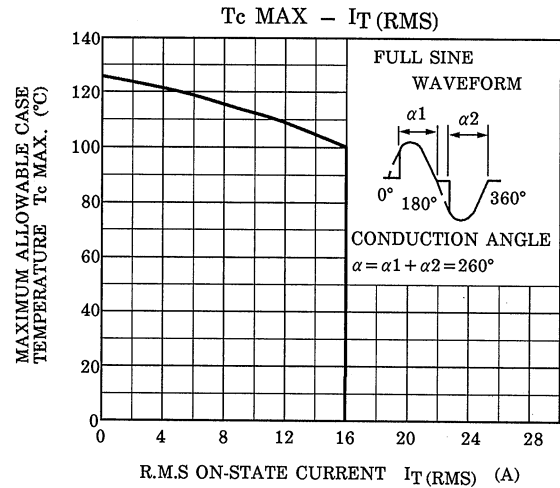
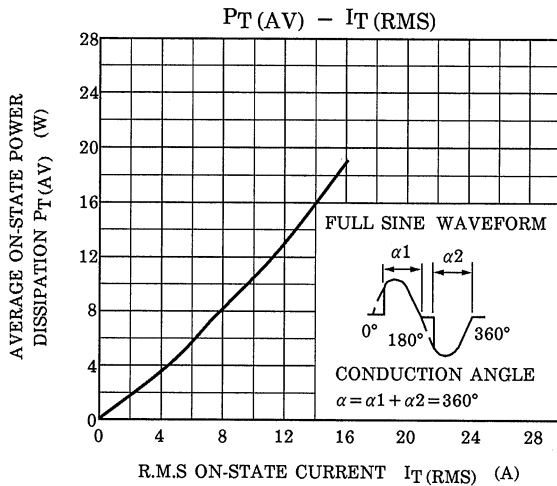
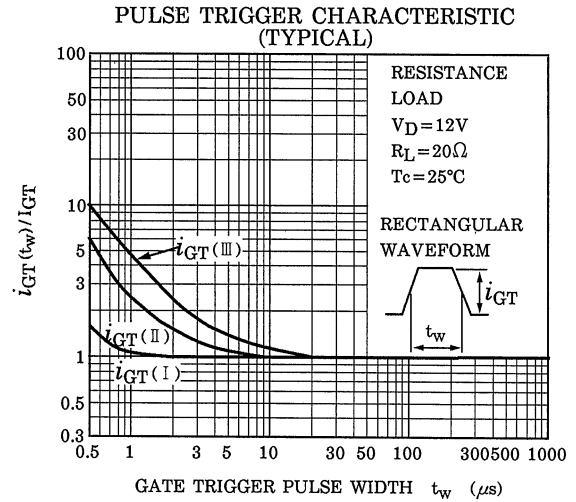
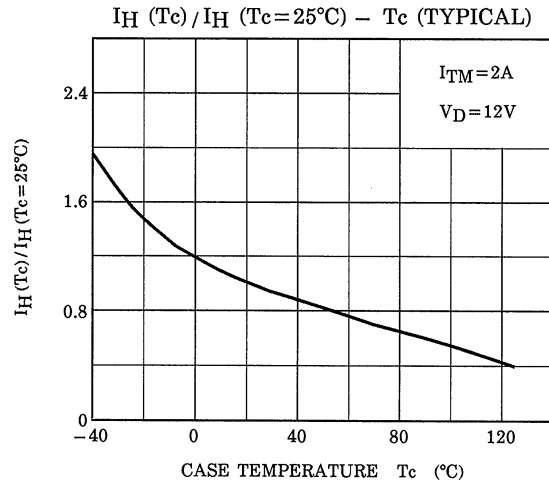
CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT	
Repetitive Peak Off-State Current		I <sub>DRM</sub>	V <sub>DRM</sub> = Rated		—	—	20	μA	
Gate Trigger Voltage		I	V <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 20Ω	T2 (+) , Gate (+)	—	—	1.5	V
		II			T2 (+) , Gate (–)	—	—	1.5	
		III			T2 (–) , Gate (–)	—	—	1.5	
		IV			T2 (–) , Gate (–)	—	—	—	
Gate Trigger Current	SM16G45 SM16J45	I	I <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 20Ω	T2 (+) , Gate (+)	—	—	30	mA
		II			T2 (+) , Gate (–)	—	—	30	
		III			T2 (–) , Gate (–)	—	—	30	
		IV			T2 (–) , Gate (+)	—	—	—	
	SM16G45A SM16J45A	I			T2 (+) , Gate (+)	—	—	20	
		II			T2 (+) , Gate (–)	—	—	20	
		III			T2 (–) , Gate (–)	—	—	20	
		IV			T2 (–) , Gate (+)	—	—	—	
Peak On-State Voltage		V <sub>TM</sub>	I <sub>TM</sub> = 25A		—	—	1.5	V	
Gate Non-Trigger Voltage		V <sub>GD</sub>	V <sub>D</sub> = Rated, T <sub>c</sub> = 125°C		0.2	—	—	V	
Holding Current		I <sub>H</sub>	V <sub>D</sub> = 12V, I <sub>TM</sub> = 2A		—	—	50	mA	
Critical Rate of Rise of Off-State Voltage at Commutation	SM16G45 SM16J45	(dv / dt) c	V <sub>D</sub> = 400V, (di / dt) c = – 8.7A / ms T <sub>j</sub> = 125°C		10	—	—	V / μs	
	SM16G45A SM16J45A				4	—	—		
Thermal Resistance		R <sub>th (j-c)</sub>	Junction to Case, AC		—	—	1.4	°C / W	

## MARKING



	Part No. (or abbreviation code)	Part No.
*1	M16G45	SM16G45, SM16G45A
	M16J45	SM16J45, SM16J45A
*2	Nothing	SM16G45, SM16J45
	M16J45A	SM16G45A, SM16J45A





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